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Silicon Valley venture capitalists nurturing growth of green technology

Start-ups often need big money and investors steeped in big science and big government.

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Reporting from Menlo Park, Calif.

In what would have been an unaccustomed move for a Silicon Valley venture capitalist not too long ago, Alan Salzman recently flew to Copenhagen to attend a conference on climate change and schmooze government policymakers.

His mission: Explain the role of venture capitalists and their green-tech start-ups in cleaning up the environment.

"All aspects of clean tech bump up against government regulations," said Salzman, whose firm, VantagePoint Venture Partners, has funded such high-profile firms as electric car maker Tesla Motors Inc. and solar power plant developer BrightSource Energy Inc.

A few years ago, venture capitalists rarely ventured too far from Sand Hill Road, a stretch of low-slung office parks nestled among redwood trees in the hills above Stanford University that is home to some of the world's biggest venture firms. As a rule, Silicon Valley venture capitalists kept their distance from regulators and policymakers. Not anymore. Climate change legislation and state regulations are influencing the fate of their green-tech portfolios and helping determine whether a start-up turns out to be the next Google Inc. or the next Webvan, the online grocer that spectacularly flamed out in the dot-com crash of 2001.

"If you're doing tech investing you don't care too much what's going on in Washington with regulatory policy, but it absolutely matters with clean tech -- it's a big driver," said Marianne Wu, a partner at the Sand Hill Road firm Mohr Davidow Ventures. "I don't think anyone from our IT group has been to D.C. in the last year. But our clean-tech group certainly is going to D.C. often."

Reinventing the past

Silicon Valley venture capitalists have always been about inventing the future -- taking a wild idea, nurturing it with cash and creativity and giving birth to new products, companies and industries we once couldn't imagine and now can't conceive of living without: the Web, Google, the iPhone, Twitter.

But as green technology becomes the latest tech wave to break from the nation's entrepreneurial epicenter, it's now all about companies reinventing the past. Solar power companies, electric car start-ups and algae biofuel ventures aim to remake century-old trillion-dollar industries on a global scale.

Venture capitalists poured \$4 billion into green-tech start-ups in 2008 -- nearly 40% of all tech investments in the U.S., according to a survey by PricewaterhouseCoopers. Green-tech investment plunged in the first half of 2009 to \$513 million as the recession dragged on, but there are signs of a rebound: Silicon Valley's Khosla Ventures announced this month that it had raised \$1.1 billion -- the biggest first-time fund in a decade -- that would be largely devoted to investing in green-tech start-ups, many in Southern California.

But green-tech companies face unique challenges, including global markets, tough technological hurdles and a future shaped by government incentives and regulatory policy. Those challenges are changing the game on Sand Hill Road.

"If you're starting a Web 2.0 company, your basic needs are personnel and servers -- there is no physical product, no manufacturing capacity, no inventory, no steel in the ground," VantagePoint's Salzman said, referring to software-based companies that provide services over the Internet.

Green-tech start-ups, he said, often need big money and investors steeped in big science and big government.

Solyndra Inc., a Silicon Valley start-up that makes rooftop solar arrays for commercial buildings, burst onto the market last October with a staggering \$600 million in venture funding and \$1.2 billion in product orders. If that wasn't enough, it has since raised nearly \$200 million more and secured a \$535-million loan guarantee from the U.S. Department of Energy to build a factory in Fremont, Calif.

California's requirement that utilities obtain a growing percentage of their electricity from renewable sources has created new markets for Mohr Davidow Ventures' start-ups. One company, Energy Innovations Inc. of Pasadena, is developing photovoltaic power equipment for commercial use. Another, Nanosolar Inc. of San Jose, has raised half a billion dollars and sells low-cost, thin-film photovoltaic panels for solar farms.

Recently, Tesla Motors scored a crucial \$465-million, low-interest loan from the federal government to build the Model S, a battery-powered sports sedan, while BrightSource Energy has applied for a loan guarantee to help finance its first solar power plant.

"We have to be competitive on the global level, and to me it's very hard to understand how

we can think globally without having some sort of partnership with the U.S. government," said Tom Baruch, a longtime Silicon Valley venture capitalist whose firm, CMEA Capital, was an early investor in Solyndra.

Green investor

Such talk was once heretical in Silicon Valley, and it still rankles Vinod Khosla, one of its most prominent investors. A co-founder of Sun Microsystems Inc. and a longtime partner at marquee venture capital firm Kleiner Perkins Caufield & Byers, Khosla started his own outfit, Khosla Ventures, in 2004 to invest in green-technology companies.

Khosla maintains one of the most eclectic green-tech portfolios -- companies involved in things as varied as solar energy, plant-based industrial chemicals and methods to improve the efficiency of internal combustion engines.

He has developed a reputation as something of a contrarian when it comes to green investing, dismissing electric cars, zero-emission buildings and other favored technologies as unable to pass what he calls the "Chindia" test: the price at which China and India will adopt a technology without subsidies.

"In the end, every single technology has to compete unsubsidized in the marketplace against fossil fuels," said Khosla, rail-thin and dressed head to toe in black during an interview at his Sand Hill office.

For Khosla, green tech is not so much changing the nature of Silicon Valley venture investing as it is about taking it back to the future. Before such investing became more of a financial business, venture capitalists in the 1980s understood technology and took technical risks, similar to what is happening now with clean technology, he said.

"It's not like you have another clever idea and you do a Web application," Khosla said. "It's about fundamental breakthroughs, and that's physics, chemistry and biology, the hard stuff."

For instance, Khosla is backing Calera, which was founded by a Stanford University professor to create "green" cement by combining carbon dioxide emissions from power plants with seawater. Another Khosla-backed company, Amyris, was started by UC Berkeley researchers.

"When I met them they were working on malaria drugs," he said of Amyris' founders. "Six months later the same genetically engineered bugs were producing diesel."

Khosla also dismisses the notion that green-tech start-ups need hundreds of millions of dollars in venture capital. Although that may be true for companies developing large-scale renewable energy projects, most green-tech ventures require no more capital than a typical chip start-up, he said.

"What's different is the amount of technical expertise needed, which many venture capitalists are just not equipped to do," Khosla said. "It's about being more patient and looking for larger breakthroughs rather than rushing things to market."

Forging alliances

Idealab founder Bill Gross has sat on both sides of the venture table and knows the virtues of patience -- solar companies that he started in 2001 are just now bringing products to market. Although it's not a venture capital firm, Pasadena-based Idealab invests in green-tech start-ups. Gross is also chief executive of solar power plant builder eSolar and the founder of Energy Innovations, funded by Mohr Davidow Ventures.

"Putting metal in the ground is a completely different thing than putting bytes on the server," he said. "In the old days you could start an Internet company and go public 15 months later. With a clean-tech company, 15 months later you're still working on a prototype."

Venture capitalists have often forged alliances with mainstream corporations to help their start-ups, but the trend has accelerated as green-tech firms try to break into multi-trillion-dollar markets. BrightSource Energy, for instance, counts among its investors not only Google and VantagePoint but oil giants including Chevron Corp., BP and Norway's Statoil Hydro.

BrightSource in August struck a deal with Chevron to build a solar power plant to generate steam that will be injected into an oil field in Coalinga, Calif., to enhance petroleum production. And this month BrightSource signed up global engineering and construction giant Bechtel Corp. as a contractor for its first big solar power plant as well as an investor in the project.

Such networks now need to be global, venture capitalists say. In the past, technology invented in Silicon Valley would first find a market in the U.S. and then spread to Europe and Asia. Thanks to years of government support for clean technologies in Europe and Asia, the most thriving markets and most formidable competitors are often found outside the U.S.

"Global markets are very, very important, and that requires a broader understanding of the competitive landscape," said Wu of Mohr Davidow Ventures. "In a lot of cases, we're seeing the technology innovation begin in the U.S. but the market starts somewhere else."

For Khosla, the changes wrought by the green wave are just the latest cycle in Silicon Valley's never-ending reinvention of itself. That venture capitalists now have the opportunity to help save the world from climate change only increases the return on investment.

"That's not to say we're do-gooders, but it's nice to work on things your kids are proud of," he said. "And I have a lot of fun at it, going up against the conventional wisdom."

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